



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,831	08/19/2003	Christopher R. McMurray	R087 1270.1	5159

26158 7590 11/29/2004

WOMBLE CARLYLE SANDRIDGE & RICE, PLLC  
P.O. BOX 7037  
ATLANTA, GA 30357-0037

EXAMINER

NGUYEN, TRINH T

ART UNIT	PAPER NUMBER
----------	--------------

3644

DATE MAILED: 11/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/643,831

Applicant(s)

MCMURRAY ET AL.

Examiner

Trinh T Nguyen

Art Unit

3644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1, 3-5, 7-9, 11, 12, 14, 20, 21, and 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Gualandi (US 6,481,356) (Please see a more detail Figures 1 & 3 of Gualandi attached with the Office Action for further explanation for claims 1, 3-5, 7-9, 11, 12, 14, 20, 21, and 27-30).

For claim 1, Gualandi discloses a sabot (8, 15, 12, 5, 2, 1, 3, 4, 6, 9), comprising: a compression section (15) defining a payload receiving chamber at a forward end of the sabot for receiving a slug (7) therein; and a solid section wherein the compression section is adapted to at least partially collapse upon firing to produce a volume change (see lines 35-50 of col. 4) (12, 5, 2, 1, Note that *The American Heritage Dictionary of the English Language, Third Edition* copyright © 1992 by Houghton Mifflin Company (Electronic version licensed from INSO Corporation) defines the term “solid” as “of definite shape and volume” or “firm or compact in substance” or “being the same substance or color throughout”. Therefore, it is believe that Gualandi’s portions 12, 5, 2, and 1 can be considered as a solid section) extending rearwardly from the compression section (see attached Figure 1).

Art Unit: 3644

For claim 3, Gualandi further discloses the payload receiving chamber further includes a post (8, 9).

For claim 4, Gualandi further discloses the solid section includes a powder cup section formed opposite the compression section.

For claim 5, Gualandi further discloses the compression section comprises a plurality of interconnected collapsible fins (15, 10B, 10A).

For claim 7, Gualandi further discloses the sabot is axisymmetric.

For claim 8, Gualandi further discloses a firearm round, comprising: a sabot (8, 15, 12, 5, 2, 1, 3, 4, 6, 9) including a compression section (15) defining a payload receiving chamber therein and a solid section wherein the compression section is adapted to at least partially collapse upon firing to produce a volume change (see lines 35-50 of col. 4) (12, 5, 2, 1, Note that *The American Heritage Dictionary of the English Language, Third Edition* copyright © 1992 by Houghton Mifflin Company (Electronic version licensed from INSO Corporation) defines the term "solid" as "of definite shape and volume" or "firm or compact in substance" or "being the same substance or color throughout". Therefore, it is believe that Gualandi's portions 12, 5, 2, and 1 can be considered as a solid section) connected to the compression section; and a slug (7) received and fitted within the payload receiving chamber of the sabot (see attached Figure 1).

For claim 9, Gualandi further discloses the slug (7) comprises a nose, a driving band adjacent the nose and a stem connected to the driving band (see attached Figure 3).

Art Unit: 3644

For claim 11, Gualandi further discloses the stem of the slug includes a post cavity (the areas where posts 8 and 9 are located).

For claim 12, Gualandi further discloses the payload receiving chamber of the sabot includes a post (8, 9) fitted within the post cavity of the slug (the areas where posts 8 and 9 are located).

For claim 14, Gualandi further discloses the stem has a diameter less than a diameter of the driving band (see attached Figure 3).

For claim 20, Gualandi further discloses the solid section of the sabot includes a powder cup (see attached Figure 1).

For claim 21, Gualandi further discloses the compression section of the sabot comprises a plurality of interconnected collapsible fins (15, 10B, 10A).

For claim 27, Gualandi further discloses a firearm round, comprising: a sabot (8, 15, 12, 5, 2, 1, 3, 4, 6, 9) including a compression section (15) defining a payload receiving chamber therein, a post (8, 9) integrally formed within the payload receiving chamber and a solid section (12, 5, 2, 1, Note that *The American Heritage Dictionary of the English Language, Third Edition* copyright © 1992 by Houghton Mifflin Company (Electronic version licensed from INSO Corporation) defines the term "solid" as "of definite shape and volume" or "firm or compact in substance" or "being the same substance or color throughout". Therefore, it is believe that Gualandi's portions 12, 5, 2, and 1 can be considered as a solid section) projecting rearwardly from the compression section; and a slug (7) fitted to the post of the sabot wherein the compression section is

Art Unit: 3644

adapted to at least partially collapse upon firing to produce a volume change (see lines 35-50 of col. 4).

For claim 28, Gualandi further discloses the slug comprises a stem defining a chamber adapted to receive the post of the sabot.

For claim 29, Gualandi further discloses the slug projects forwardly from the compression section of the sabot.

For claim 30, Gualandi further discloses the post substantially fills the payload receiving chamber.

### **Claim Rejections – 35 USC § 103**

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gualandi (US 6,481,356).

Gualandi is silent about having the driving band includes a length less than about 25% of the overall diameter of the firearm round. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the driving band includes a length less than about 25% of the overall diameter of the firearm round, since it has been held where routine testing and general experimental conditions are present, discovering an optimum value of a result effective variable involves only routine

Art Unit: 3644

skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Furthermore, since applicant did not provide a reason or an advantage as to why the driving band has to be in a length less than about 25% of the overall diameter of the firearm round, it is believe that through trial and error in manufacturing procedure that one comes up with this value to meet the require design criteria for manufacturing of a firearm round.

5. Claims 2, 19, 22-24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gualandi (US 6,481,356) in view of Hoffman (US 4,939,997) (Please see a more detail Figures 1 & 3 of Gualandi attached with the Office Action for further explanation for claims 2, 19, 22-24, and 26).

For claims 2, 19, and 22, as described above, Gualandi discloses most of the claimed invention except for indicating that the compression section further includes a locking ring mounted within the payload receiving chamber for engaging the slug.

Hoffman teaches a similar firearm round as that of Gualandi in which Hoffman's firearm round having a projectile/slug (6) mounted within a sabot (1) wherein the sabot further comprises the use of a locking ring (7) so as to engage the projectile/slug therein (see Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Gualandi so as to include the use of a locking ring for the engagement of the projectile/slug within the sabot, in a similar manner as taught in Hoffman, since to do so would provide the locking ring as a securing device under centrifugal force and in response to the spin acting on the projectile/slug the locking ring will expand to facilitate the projectile/slug exiting from the sabot.

Art Unit: 3644

For claim 23, Gualandi as modified by Hoffman (emphasis on Gualandi) further discloses the solid section (12, 5, 2, 1, Note that *The American Heritage Dictionary of the English Language, Third Edition* copyright © 1992 by Houghton Mifflin Company (Electronic version licensed from INSO Corporation) defines the term "solid" as "of definite shape and volume" or "firm or compact in substance" or "being the same substance or color throughout". Therefore, it is believe that Gualandi's portions 12, 5, 2, and 1 can be considered as a solid section) includes a powder cup section (see attached Figure 1).

For claim 24, Gualandi as modified by Hoffman (emphasis on Gualandi) further discloses the compression section (15) comprises a plurality of interconnected collapsible fins (15, 10B; 10A).

For claim 26, Gualandi as modified by Hoffman (emphasis on Gualandi) further discloses a projectile (7) received within the payload receiving chamber and extending forwardly from the compression section.

6. Claims 6, 10, 15, 16, 18, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gualandi (US 6,481,356) in view of Dippold et al. (US 5,263,418).

For claims 6 and 18, as described above, Gualandi discloses most of the claimed invention except for indicating that the sabot comprises a high density polyethylene. However, Dippold et al. teaches a similar firearm round as that of Gualandi in which Dippold et al.'s firearm round having a sabot (12) made out of polyethylene (see lines 39-41 of col. 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Gualandi so as to



Art Unit: 3644

include the use of a polyethylene sabot, in a similar manner as taught in Dippold et al., since using polyethylene sabot would allow the sabot to be compressed when the slug is loaded into the barrel/round and thus provide a snug fit without undesired bulging.

For claim 10, as described above, Gualandi discloses most of the claimed invention except for indicating that the nose of the slug includes a nose cavity. However, Dippold et al. teaches a similar firearm round as that of Gualandi in which Dippold et al.'s firearm round having a slug (10) includes a nose cavity/recess (26) thereon. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Gualandi so as to include a nose cavity/recess in the slug, in a similar manner as taught in Dippold et al., since to do so would allow the forming of spaced petals which curl outwardly and rearwardly; thus, increasing the outer diameter of the slug so that it enhances the cutting and tearing action of the slug as it passes through the target.

For claims 15 and 31, as described above, Gualandi discloses most of the claimed invention except for indicating that the slug comprises at least about 95% by weight lead. However, Dippold et al. teaches a similar firearm round as that of Gualandi in which Dippold et al.'s firearm round having a slug includes at least about 95% by weight lead (see lines 30-33 of col. 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Gualandi so as to include a slug having at least about 95% by weight lead, in a similar manner as taught in Dippold et al., since using lead slug (note that lead is a

Art Unit: 3644

dense and/or heavy metallic element which has high specific gravity) would increase the penetration potential to a target and thus provide more damage to the target.

For claim 16, as described above, Gualandi discloses most of the claimed invention except for indicating that the slug comprises antimony. However, Dippold et al. teaches a similar firearm round as that of Gualandi in which Dippold et al.'s firearm round having a slug comprises antimony (see lines 30-33 of col. 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Gualandi so as to include a slug made out of antimony, in a similar manner as taught in Dippold et al., since using antimony in combination with lead in slug would greatly increase the mechanical strength and hardness of lead and thus would produce a hard and strong slug which would cause more damage to the target.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gualandi (US 6,481,356) in view of Stevens (US 5,361,701).

As described above, Gualandi discloses most of the claimed invention except for indicating that the slug is plated or jacketed.

Stevens teaches a similar firearm round as that of Gualandi in which Stevens' firearm round having a plated or jacketed slug (137 and 237 in Figures 3 & 4). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Gualandi so as to include the use of a plated or jacketed slug, in a similar manner as taught in Stevens, since to do so would

Art Unit: 3644

serve to prevent the lead slug from rubbing onto and clogging the rifling and to maintain the integrity in the shape of the slug.

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gualandi (US 6,481,356) in view of Hoffman (US 4,939,997), and further in view of Dippold et al. (US 5,263,418).

Gualandi as modified by Hoffman discloses most of the claimed invention except for indicating that the sabot comprises a high-density polyethylene, low-density polyethylene, linear, low-density polyethylene, and combinations thereof.

Dippold et al. teaches a similar firearm round as that of Gualandi as modified by Hoffman in which Dippold et al.'s firearm round having a sabot (12) made out of polyethylene (see lines 39-41 of col. 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Gualandi as modified by Hoffman so as to include the use of a polyethylene sabot, in a similar manner as taught in Dippold et al., since using polyethylene sabot would allow the sabot to be compressed when the slug is loaded into the barrel/round and thus provide a snug fit without undesired bulging.

### ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 3644

10. Claims 1, 4, 5, 7, 8, 17, 20, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Stevens (US 5,361,701) (Please see a more detail Figure 1 of Stevens attached with the Office Action for further explanation for claims 1, 4, 5, 7, 8, 17, 20, and 21).

For claim 1, Stevens discloses a sabot (20), comprising: a compression section defining a payload receiving chamber at a forward end of the sabot for receiving a slug (36) therein; and a solid section extending rearwardly from the compression section wherein the compression section is adapted to at least partially collapse upon firing to produce a volume change (see lines 54-68 of col. 4).

For claim 4, Stevens further discloses the solid section includes a powder cup section (56) formed opposite the compression section.

For claim 5, Stevens further discloses the compression section comprises a plurality of interconnected collapsible fins.

For claim 7, Stevens further discloses the sabot is axisymmetric.

For claim 8, Stevens further discloses a firearm round, comprising: a sabot (20) including a compression section defining a payload receiving chamber therein and a solid section connected to the compression section; and a slug (36) received and fitted within the payload receiving chamber of the sabot wherein the compression section is adapted to at least partially collapse upon firing to produce a volume change (see lines 54-68 of col. 4).

For claim 17, Stevens further discloses the slug is plated or jacketed (see lines 17-30 and Figures 3 & 4).

Art Unit: 3644

For claim 20, Stevens further discloses the solid section of the sabot (20) includes a powder cup (56).

For claim 21, Stevens further discloses the compression section of the sabot (20) comprises a plurality of interconnected collapsible fins.

### ***Response to Arguments***

10. Applicant's arguments filed 8/20/04 have been fully considered but they are not persuasive.

11. Applicant argues that the prior art fails to disclose a sabot having "a compression section is adapted to at least partially collapse upon firing to produce a volume change. It is noted that the compression sections in Gualandi and Stevens are capable of collapse upon firing to produce a volume change (see lines 35-50 of col. 4 of Gualandi and lines 54-68 of col. 4 of Stevens).

### ***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 3644

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trinh T Nguyen whose telephone number is (703) 306-9082. The examiner can normally be reached on M-F (9:30 A.M to 6:00 P.M).

The examiner's supervisor, Teri Luu, can be reached on (703) 305-7421. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ttn  
11/23/04



TERI PHAM LUU  
SUPERVISORY  
PRIMARY EXAMINER